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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/057,906	01/29/2002	Chih-Jung Ni	MR3029-11	3703

4586 7590 06/16/2005

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EXAMINER	
EL ARINI, ZEINAB	

ART UNIT	PAPER NUMBER
1746	

DATE MAILED: 06/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/057,906	NI ET AL.	
	Examiner	Art Unit	
	Zeinab E. EL-Arini	1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 April 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *26,27,29,31,33-38 and 40-50* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *26-27, 29, 31, 33-38, and 40-50* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

The amendment and remarks filed 04/04/05 have been acknowledged and entered.

The rejection under 35 U.S.C. 112, second paragraph stated in paper No. 022205 has been withdrawn in view of applicants' amendment.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 26, 33-37, and 40-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's

disclosure in combination with Torek et al. (6,562,726 or 6,453,914).

Applicant admitted that the conventional method includes all limitations with the exception of the inert gas.

Torek et al ('726 or '914) teach a method for cleaning a wafer comprising using a cleaning solution, and then rinsing, and the rinsing bath may be agitated by introduction of a gas such as nitrogen, and drying the substrate.

It would have been obvious for one skilled in the art to use the gas to agitate the rinsing solution to improve the conventional cleaning process.

Applicant's disclosure in combination with Torek et al. do not teach the steps of placing the wafer over said

stripping solution at least about 100 seconds so as to render said stripping solution left on said wafer dripping, and placing the wafer over a first organic solvent at least 50 seconds so as to render said stripping solution and said first organic solvent left on said wafer dripping down as claimed.

It is well known in the art to withdraw the wafer slowly from the cleaning solution to improve the cleaning process, by dripping most of the cleaning solution before transferring the wafer to a second cleaning or drying solution. One skill in the art would adjust the time to remove the wafer from the stripping solution, and the second cleaning solution, so as to drip most of the stripping solution and organic solution, to obtain optimum

results. This is because the time taken for removing the wafer slowly from the cleaning solutions is functionally equivalent to the time taken to place the wafer over the stripping solutions.

Claims 26-27, 29, 31, 33-38, and 40-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in combination with Torek et al.

Lee teaches a method for removing polymer residues from a surface of a substrate comprising immersing the wafer in a stripping solution, the stripping solution comprises a hydroxylamine compound, an alcohol amine compound, an anti-corrosion agent, dihydroxybenzene, and water for a time and temperature

sufficient to remove the polymeric residues from the surface of substrate. The reference teaches rinsing the substrate with organic solvent, followed by deionized water rinse, and the drying the substrate. See the abstract, col. 1, line 61- col. 2, line 59, col. 3, lines 23-51, col. 5, line 13- col. 6, line 5, examples 2 and 10, and the document in general.

Lee does not teach the time , providing gas to rinsing solution, and the second solvent as claimed.

Torek et al. as discussed supra teach using a gas such as nitrogen to agitate the rinsing solution. See col. 3, line 56- col. 4, line 57, and claims 1, 16-19, 28, 30-38, and the document in general.

It would have been obvious for one skilled in the art to use the gas taught by Torek et al. in the Lee's process to enhance the rinsing process and to enhance removing the stripping solution from the substrate. It would have been obvious for one skilled in the art to repeat the rinsing step to enhance the removing of the residues and the stripping and rinsing solution from the surface of the substrate. It would have been obvious for one skilled in the art to adjust the stripping time, the rinsing time to obtain optimum results. This is because the time is determined based on particular material being removed. See Lee, col. 5, lines 49-67.

Lee in combination with Torek et al. teach all limitations with the exception of the placing steps as claimed.

It would have been obvious for one skilled in the art to adjust the time between removing and immersing the substrate in Lee process to allow stripping solution to drip over the stripping solution, and over the solvent as claimed. This is because it is well known in the art to withdraw the wafer slowly from the cleaning solution to improve the cleaning process, by dripping most of the cleaning solution before transferring the wafer to a second cleaning or drying solution. One skill in the art would adjust the time to remove the wafer from the stripping solution, and the second cleaning solution, so as to drip

most of the stripping solution and organic solution, to obtain optimum results. This is because the time taken for removing the wafer slowly from the cleaning solutions is functionally equivalent to the time taken to place the wafer over the stripping solutions.

These rejections stated in paper No. 022205 are maintained.

Response to Arguments

1. Applicant's arguments filed 04/04/05 have been fully considered but they are not persuasive. Applicants' argument regarding the immersion time, the drip dry time, and the second immersion time is unpersuasive, because one of ordinary skill in the art at the time applicants invented the claimed process would adjust the time to

remove the wafer from the stripping solution, and the second cleaning solution, so as to strip most of the stripping solution and organic solution to obtain optimum results. It is well known in the art to withdraw the wafer slowly from the cleaning solution to improve the cleaning process, by dripping most of the cleaning solution before transferring the wafer to a second cleaning or drying solution.

Conclusion

2. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing

date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to

Zeinab E. EL-Arini whose telephone number is (571) 272-1301. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on (571) 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Zeinab E. EL-Arini
Primary Examiner
Art Unit 1746

ZEE
06/10/05